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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,694	01/23/2002	Chanchal Chatterjee	D02750	8890

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EXAMINER

DO, CHAT C

ART UNIT PAPER NUMBER

2193

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/057,694

Applicant(s)

CHATTERJEE, CHANCHAL

Examiner

Chat C. Do

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-44 is/are pending in the application.
- 4a) Of the above claim(s) 4-7, 22-42 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 and 17 is/are allowed.
- 6) ☒ Claim(s) 1, 8-15, 18-21, 43 and 44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This communication is responsive to Amendment filed 08/08/2005.
2. Claims 1, 8-21, and 43-44 are pending in this application. Claims 1, 16-17, and 43-44 are independent claims. In Amendment, claims 2-3 and 45-46 are cancelled. This Office Action is made final.

Oath/Declaration

3. Applicant has not given a post office or a resident address anywhere in the Oath/Declaration papers as required by 37 CFR 1.33(a), which was in effect at the time of filing of the oath or declaration. A statement over applicant's signature providing a complete post office address is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 8-15, 18-19, and 43-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Dijkstra (U.S. 6,795,841).

Re claim 1, Dijkstra discloses in Figures 2-3 a method in a signal processor for filtering samples in a digital signal (e.g. abstract), the method comprising: generating (e.g. Figure 3 with 32) an approximate filtered sample as a function of two samples (e.g. only two samples A or B in Figure 3) of the digital signal (e.g. only samples in term of A and B) wherein the two samples are a first fixed-point number, A (e.g. 26 in Figure 3), and a second fixed-point number, B (e.g. 28 in Figure 3), wherein generating the approximate filtered sample includes calculating $(A+B+1) \gg 1$ (e.g. either 36 or 38 with right shift by 1) wherein the " \gg " represents a right-shift; generating a correction (e.g. 34) as a function of the less than four samples (e.g. only samples in term of A and B); and generating a filtered sample (e.g. either 36 or 38) by modifying the approximate filtered sample with the correction (e.g. adding or subtracting 34).

Re claim 8, Dijkstra further discloses in Figures 2-3 generating the approximate filtered sample further includes: calculating $E = ((A+B+1) \gg 1) \ll S$; calculating $F = ((A+B+1) \gg 1) \ll R$; and calculating the approximated filtered sample as $E + F$; wherein S and R are positive fixed-point numbers (e.g. let S and R be zero, then approximated sample is $(A+B+1)$ which is 38 before right shift in Figure 3)

Re claim 9, Dijkstra further discloses in Figures 2-3 generating the correction includes: calculating $Q = \sim(A \text{ xor } B)$; masking Q with the number one; calculating $G = Q \ll (S-1)$; calculating $H = Q \ll (R-1)$; and calculating the correction as $G + H$ (e.g. let S and R be zero, then correction is $\sim(A \text{ xor } B)$ which is 34 in Figure 3).

Re claim 10, Dijkstra further discloses in Figures 2-3 generating the filtered sample includes: calculating (e.g. either step 36 or 38 in Figure 3) the filtered sample as

the approximate filtered sample added with the correction; and right-shifting the filtered sample by $N-1$ bits, wherein N is a positive fixed-point number (e.g. $N = 2$).

Re claims 11-12, they have same limitations as claims 8-10. Thus, claims 11-12 are also rejected under the same rationale as cited in the rejection of rejected claims 8-10.

Re claim 13, Dijkstra further discloses in Figures 2-3 generating the filtered sample includes calculating the filtered sample as the approximate filtered sample added with the correction (e.g. 38 in Figure 3).

Re claim 14, Dijkstra further discloses in Figures 2-3 the two samples are fixed-point numbers, and wherein generating the correction includes: calculating the correction as the exclusive OR (XOR) of the two samples; and masking the correction with the integer one (e.g. 34).

Re claim 15, Dijkstra further discloses in Figures 2-3 generating the correction further includes, prior to the masking step, generating a bit-wise complement of the correction (e.g. 34).

Re claim 18, Dijkstra further discloses in Figures 2-3 generating the filtered sample includes adding the correction to the approximate filtered sample (e.g. 38).

Re claim 19, Dijkstra further discloses in Figures 2-3 generating the filtered sample includes subtracting the correction from the approximate interpolated sample (e.g. 36).

Re claim 43, it is a computer program on computer readable medium claim of claim 1. Thus, claim 43 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 44, it is a system claim of claim 1. Thus, claim 43 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being obvious over Dijkstra (U.S. 6,795,841) in view of Intel ("IA-32 Intel^R Architecture Software Developer's Manual").

Re claims 20-21, Dijkstra does not disclose in Figures 2-3 the microprocessor is an Intel microprocessor with MMXTM/SSE, wherein the two samples are 8-bit fixed-point or integers numbers, wherein the steps of generating the approximate filtered sample, generating the correction and generating the filtered sample include executing the instructions:

```
{ pxor C REG, A REG ;  
pand C_REG, CONST;  
pavgb A REG, B REG ;  
psubb A REG, C REG ; }  
  
{ pxor C REG, A REG ;  
pandn C_REG CONST;  
pavgb A REG, B-REG ;
```

paddb A REG, C-REG ;}

wherein A-REG is a register that initially includes one of the two samples, B-REG is a register that includes the other of the two samples, C-REG is a register that initially includes the other of the two samples, and CONST is a constant that includes the eight-bit number 0x01. However, Intel discloses in pages 3-537, the microprocessor is an Intel microprocessor with MMXTM/SSE (e.g. pages 3-537), wherein the two samples are 8-bit fixed-point or integers numbers, wherein the steps of generating the approximate filtered sample, generating the correction and generating the filtered sample (e.g. averaging) include executing the instructions: pxor (e.g. pg 3-657), pand (e.g. pg 3-540), pavgb (e.g. pg 3-545), psubb (e.g. pg 3-630), pandn (e.g. pg 3-542), paddb (e.g. pg 3-529). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the intel microprocessor with all the instructions above as cited in Intel's manual into Dijkstra's invention because it would enable to increase the system performance by utilizing pre-instructions in Intel processor.

Allowable Subject Matter

8. Claims 16-17 are allowed.

Response to Arguments

9. Applicant's arguments filed 08/08/2005 have been fully considered but they are not persuasive.

- a. The applicant argues in page 20 third paragraph for independent claims 1 and 43-44 that the cited reference does not disclose addition of 1 or a right-shift by one bit in element as cited in the claimed invention. Similar allegation for claims 20-21.

The examiner respectfully submits that the addition of 1 is clearly shows in Figure 3 with the first two examples of adding $13+2$ and $5+13$ and right shift by one bit is seen in either rounding up or down in Figure 3 depending on the requirement. For instance, $A + B$ wherein $A = 1101$ and $B = 0010$ is equal to $1111 + 1 = 10000$ as seen in 32 of the first column.

- b. The applicant argues in pages 20-21 for claim 8 that element 38 of Dijkstra cannot be both an approximate filtered sample and a filtered sample as apparently alleged by the examiner.

The examiner respectfully submits that the current claimed language does not limit the range of R and S fixed-point number. Thus, the examiner interprets these parameters as zero.

- c. The applicant argues in page 21 second and fourth paragraphs for claims 9 and 15 that the cited reference fails to disclose the bit-wise complement of any number in element as cited.

The examiner respectfully submits that Figure 3 part 34 clearly shows the exclusive OR of A and B wherein the ExOR is the bit-wise complement.

- d. The applicant argues in page 21 third paragraph for claims 11-12 that the mathematical expressions in claims 11-12 are the same as those of claims 8-10.

The examiner respectfully submits that similarly as response to limited range of the parameters. Since the claims do not clearly define the parameters of these claims, the examiner equates the parameters (N-1-S) and (N-1-R) to zero and similarly for (N-S) and (N-R).

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

Art Unit: 2193

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2193

October 6, 2005


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